1. A system for duplicating a hologram comprising:

a radiation source for emitting a coherent beam of radiation;

a hologram; and

a recording substrate comprised of a polymer-dispersed liquid crystal material for recording a replica of the hologram therein, wherein the hologram and the recording substrate are in optical contact with one another and are placed in a path of the coherent beam of radiation.

2. The system according to claim 1, wherein the polymer-dispersed liquid crystal material is comprised of:

(a) a polymerizable monomer comprising at least one acrylate;

(b) at least one type of liquid crystal material;

(c) a chain-extending monomer;

(d) a coinitiator; and

(e) a photoinitiator.

3. The system according to Claim 2, wherein the polymerizable monomer comprises a mixture of di-, tri-, tetra-, and penta-acrylates

4. The system according to Claim 2, wherein the polymerizable monomer is at least one acrylate selected from the group consisting of triethyleneglycol diacrylate, trimethylolpropane triacrylate, pentaerythritol triacrylate, pentaerythritol tetracrylate, and dipentaerythritol penta-acrylate.

comprises a mixture of tri- and penta-acrylates.

6. The system according to Claim 2, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate.

7. The system according to Claim 1, wherein the polymer-dispersed liquid crystal material further comprises a surfactant.

8. The system according to Claim 7, wherein the surfactant is octanoic acid.

9. The system according to Claim 2, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate, the at least one liquid crystal material comprises a mixture of cyanobiphenyls, the chain-extending monomer is N-vinyl pyrrolidone, the coinitiator is N-phenylglycine, and the photoinitiator is rose bengal.

10. The system according to claim 1, wherein the radiation source is a laser.

11. The system according to claim 1, wherein a diffraction efficiency of the hologram is continuously variable.

12. A method for duplicating a hologram comprising:

directing a coherent incident radiation beam at a first optical component;

transmitting the coherent incident radiation beam through the first optical component forming a transmitted beam, to a second optical component having a hologram recorded therein; and

diffracting the transmitted beam via the hologram forming a diffracted radiation beam, wherein the coherent incident radiation beam and the diffracted beam interfere within the first optical component to form a replica of the hologram therein.

13. The method for duplicating a hologram according to claim 12, wherein the first optical component is comprised of a polymer-dispersed liquid crystal material.

crystal material is comprised of:

(a) a polymerizable monomer comprising at least one acrylate;

(b) at least one type of liquid crystal material;

(c) a chain-extending monomer;

(d) a coinitiator; and

(e) a photoinitiator.

15. The method according to Claim 14, wherein the polymerizable monomer comprises a mixture of di-, tri-, tetra-, and penta-acrylates.

16. The method according to Claim 14, wherein the polymerizable monomer is at least one acrylate selected from the group consisting of triethyleneglycol diacrylate, trimethylolpropane triacrylate, pentaerythritol triacrylate, pentaerythritol tetracrylate, and dipentaerythritol penta-acrylate.

17. The method according to Claim 14, wherein the polymerizable monomer comprises a mixture of tri- and pentaacrylates.

18. The method according to Claim 14, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate.

19. The method according to Claim 14, wherein the polymer-dispersed liquid crystal material further comprises a surfactant.

20. The method according to Claim 19, wherein the surfactant is octanoic acid.

21. The method according to Claim 14, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate, the at least one liquid crystal material

pyrrolidone, the coinitiator is N-phenylglycine, and the photoinitiator is rose bengal.

22. A method for duplicating a hologram comprising:

directing a coherent radiation beam at a first optical component having a hologram recorded therein;

diffracting a first portion of the coherent radiation beam via the hologram forming a diffracted radiation beam;

transmitting a second portion of the coherent radiation beam through the first optical component forming a transmitted beam; and

interfering the diffracted radiation beam with the transmitted radiation beam within a second optical component to form a replica of the hologram therein.

23. The method for duplicating a hologram according to claim 22, wherein the second optical component is comprised of a polymer-dispersed liquid crystal material.

24. The method according to claim 23, wherein the polymer-dispersed liquid crystal material is comprised of:

(a) a polymerizable monomer comprising at least one acrylate;

(b) at least one type of liquid crystal material;

(c) a chain-extending monomer;

(d) a coinitiator; and

(e) a photoinitiator.

25. The method according to Claim 24, wherein the polymerizable monomer comprises a mixture of di-, tri-, tetra-, and penta-acrylates.

26. The method according to Claim 24, wherein the polymerizable monomer is at least one acrylate selected from the group consisting of triethyleneglycol diacrylate, trimethylolpropane triacrylate, pentaerythritol triacrylate, pentaerythritol tetracrylate, and dipentaerythritol pentaacrylate.

27. The method according to Claim 24, wherein the polymerizable monomer comprises a mixture of tri- and penta-acrylates.

28. The method according to Claim 24, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate.

29. The method according to Claim 24, wherein the polymer-dispersed liquid crystal material further comprises a surfactant.

30. The method according to Claim 29, wherein the surfactant is octanoic acid.

31. The method according to Claim 24, wherein the polymerizable monomer comprises dipentaerythritol pentaacrylate, the at least one liquid crystal material comprises a mixture of cyanobiphenyls, the chain-extending monomer is N-vinyl pyrrolidone, the coinitiator is N-phenylglycine, and the photoinitiator is rose bengal.

32. A method for contact recording at least one hologram comprising:

arranging at least a first master hologram and at least a first holographic blank in optical contact to form a master/blank assembly;

exposing the master/blank assembly to a pre-recording beam; and

exposing the master/blank assembly to a recording beam, wherein the master/blank assembly remains optically contacted throughout each exposure.

33. The method according to claim 32, further comprising exposing the master/blank assembly to a post-recording beam.

34. The method according to claim 32, wherein a diffraction efficiency of the first master hologram is continuously variable.

35. The method according to claim 34, wherein the continuously variable diffraction efficiency of the first master hologram includes at least the following two states, ON and OFF.

36. The method according to claim 32, wherein the first master hologram is formed of a polymer-dispersed liquid crystal material.

37. The method according to claim 35, wherein the continuously variable first master hologram is switched OFF during exposure of the master/blank assembly to the pre-recording beam and the first master hologram is switched ON during exposure of the master/blank assembly to the recording beam, thereby forming a first replica of the first master hologram in the first holographic blank.

38. The method according to claim 37, wherein the first master hologram is switched OFF during exposure of the master/blank assembly to the post-recording beam.

39. The method according to claim 33, wherein the pre-recording beam, the recording beam, and the post-recording beam are the same beam.

40. The method according to claim 33, wherein of the pre-recording beam, the recording beam, and the post recording beam at least one is different from the others.

41. The method according to claim 37, wherein a diffraction efficiency of the first replica is continuously variable.

42. The method according to claim 41, wherein the continuously variable diffraction efficiency of the first replica includes at least the following two states, ON and OFF.

43. The method according to claim 37, wherein the first replica is formed of a polymer-dispersed liquid crystal material.

44. The method according to claim 42, wherein the master/blank assembly further includes a second master hologram and a second holographic blank in optical contact and the first master hologram and the first replica are switched OFF during each of the following, exposure of the second holographic blank to a pre-recording beam, recording of the second master hologram in the second holographic blank, and exposure of a resulting second replica to a post-recording beam.

45. The method according to claim 44, wherein the first master hologram and the second master hologram are the same master hologram.

46. A method for contact recording at least one hologram comprising:

arranging at least a first master hologram and at least first holographic blank in optical contact to form a master/blank assembly;

exposing the master/blank assembly to a recording beam; and

exposing the master/blank assembly to a post-recording beam, wherein the master/blank assembly remains optically contacted throughout each exposure.

47. A system for contact recording multiple holograms comprising:

a first, second, and third master hologram;

a first, second, and third holographic blank wherein the first, second, and third master hologram and the first, second, and third holographic blanks are in optical contact, forming a stack; and

a first, second, and third recording beam, wherein when the first recording beam is incident upon the stack, the first master hologram is ON and the second and third master holograms are OFF, forming a first replica hologram of the first master hologram in the first holographic blank; when the second recording beam is incident on the stack, the first and third master holograms are OFF, the first replica hologram is OFF, and the second master hologram is ON, forming a second replica hologram of the second master hologram in the second holographic blank; when the third recording beam is incident on the stack, the first and second master holograms are OFF, the first and second replica holograms are OFF, and the third master hologram is ON, forming a third replica hologram of the third master hologram in the third holographic blank.

48. A method for contact printing multiple master holograms comprising:

providing a stack comprised of first, second, and third master holograms and first, second, and third holographic blanks that are in optical contact;

switching ON the first master hologram;

exposing the stack with a first recording beam, forming a first replica hologram within the first holographic blank;

switching OFF the first master hologram and switching ON the second master hologram;

exposing the stack with a second recording beam, forming a second replica hologram within the second holographic blank;

switching OFF the second master hologram and switching ON the third master hologram; and

exposing the stack with a third recording beam, forming a third replica hologram within the third holographic blank.